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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/783,429	02/20/2004	Ronald D. Knudsen	210453US01 (4081-04401)	6369

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EXAMINER	
MCDONOUGH, JAMES E	
ART UNIT	PAPER NUMBER
1755	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/19/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/783,429	KNUDSEN ET AL.	
	Examiner	Art Unit	
	James E. McDonough	1755	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 April 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3,5-8,11-24,31,38,43,45-48 and 51-68* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,5-8,11-24,31,38,43,45-48 and 51-68* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *3/5/2007*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ :
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Original Rejection

Claims 1-3, 5-8, 11-24, 31, 38, 43, 45-48 and 51-68 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reagan in view of Manzer as cited in and for the reasons of record given in paragraph 5 of the final rejection mailed 5/24/06.

Reagan discloses the invention substantially as claimed (abstract; Fig. 1; column 3, line 18 to column 3, line 33; column 6, line 58 to column 6, line 64; column 8, line 37 to column 8, line 68; column 9, line 57 to column 9, line 68; column 10, line 18 to column 10, line 22; column 11, line 11 to column 11, line 19; column 11, line 45 to column 11, line 66; column 12, line 50 to column 13, line 32; column 14, line 37 to column 14, line 68; column 15, line 55 to column 15, line 68; and column 17, line 6 to column 17, line 10)

Reagan lacks explicit disclosure that a non-halide metal alkyl can eliminate water from any of the reagents used in the preparation of its compounds, or that water may also be removed by distillation of its azeotropes with any number of solvents with which it forms azeotropes, although the disclosure is rife with references to the need to work in anhydrous conditions in order to prepare and use its catalysts.

However, Manzer explicitly teaches that organoaluminum compounds, a species of non- halide metal alkyl, can indeed remove trace water from compounds analogous to those of the present claims (column 6, line 35 to column 6, line 44). In addition, distillation of azeotropes of water using other solvents with which water forms azeotropes using Dean-Stark traps is a conventional technique for removing trace water

from liquids, e.g. the purification of grain alcohol i.e. ethanol to 100% by addition of benzene to the 95% pure material normally obtained in the distillation of grain spirits followed by distilling this mixture which removes an azeotrope of benzene and water, leaving behind benzene and ethanol, which can be separated by ordinary distillation since benzene and ethanol do not form an azeotrope, i.e. a constant boiling mixture of two liquids.

It would have been obvious to one of ordinary skill in the art to apply the teaching Manzer to the disclosure of Reagan with a reasonable expectation of obtaining a highly-useful method of making an olefin oligomerization catalyst with the expected benefit of higher yield of the catalyst because less of its precursors are destroyed by reaction with water as an impurity in the reactants and solvents used to make the catalyst.

Claims 43, 45-46, 52 and 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reagan as cited above in view of Furtek, USP 4,876,229 (hereafter referred to as Furtek).

The disclosure of Reagan has been discussed above.

Reagan lacks disclosure that adsorbents can be used to remove water from e.g. solvents and liquid reactants in the preparation of its compounds.

However, Furtek teaches at col. 11, 1. 48-52, that silica gel and molecular sieves are conventional adsorbents to remove traces of water from reagents that are to be used in processes of making water-reactive compounds or compositions.

It would have been obvious to one of ordinary skill in the art to apply the teaching of Furtek to the disclosure of Reagan with a reasonable expectation of obtaining a highly-useful method of making an olefin oligomerization catalyst with the expected benefit of higher yield of the catalyst because less of its precursors are destroyed by reaction with water as an impurity in the reactants and solvents used to make the catalyst.

Response to Arguments

Applicants argue that the references do not teach or suggest all the limitations of the claims such as the addition sequence. This is found not persuasive because Reagan also teaches that the reagents can be combined in any manner under conditions suitable to form an effective catalyst and, since the catalyst will be degraded by the presence of either water, oxygen, or acidic protons and since metal alkyls can sequester all of these, it would have made it obvious to add the metal alkyl first to dry the. reagents. Also adding the metal halide in the presence of water or acidic protons would generate hydrogen halides such as HCl, which are corrosive and preferably avoided (column 11, line 45 to column 11, line 66; column 14, line 27 to column 14, line 36; column 14, line 57 to column 14, line 68;).

Applicants argue that the advantage of their addition order is the reduced formation of corrosive compounds such as hydrogen chloride. However, if there is excess alkyl aluminum compounds around it is not understood how corrosive

compounds can be produced since all of the acidic protons have been removed, which, would in and of itself prevent the formation of hydrogen chloride because there are no free hydrogen atoms available to form this corrosive compound.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James E. McDonough whose telephone number is (571)272-6398. The examiner can normally be reached on 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo can be reached on (571)272-1233. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JEM 4/16/2007

Aileen Felton

AILEEN FELTON
PRIMARY EXAMINER